

**Gates & Cooper** LLP

Howard Hughes Center  
6701 Center Drive West, Suite 1050  
Los Angeles, California 90045

**FAX TRANSMISSION TO USPTO**

TO: Commissioner for Patents  
Attn: **Toni Hood**  
Patent Examining Corps  
Facsimile Center  
Alexandria, VA 22313-1450

FROM: Anthony J. Orler  
OUR REF.: PD-02-0839  
TELEPHONE: (310) 342-5564

Total pages, including cover letter: 7

PTO FAX NUMBER: **703-308-5083**

If you do NOT receive all of the pages, please telephone us at (310) 641-8797, or fax us at (310) 641-8798.

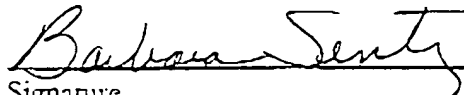
Title of Document Transmitted:	TRANSMITTAL SHEETS, RESPONSE TO NOTICE OF DRAWING INCONSISTENCY WITH SPECIFICATION, MARKED UP SPECIFICATION SHEET AND REPLACEMENT SPECIFICATION SHEET.
Applicant:	Daniel F. Sievenpiper et al.
Serial No.:	10/628,019
Filed:	July 25, 2003
Group Art Unit:	2821
Title:	CIRCULARLY POLARIZED ANTENNA HAVING IMPROVED AXIAL RATIO
Our Ref. No.:	PD-02-0839

Please charge all fees to Deposit Account No. 50-0494 of Gates & Cooper LLP.

By: 

Name: Anthony J. Orler  
Reg. No.: 41,232

I hereby certify that this paper is being transmitted by facsimile to the U.S. Patent and Trademark Office on the date shown below.

  
Signature

August 19, 2005  
Date

Due Date: September 16, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Daniel F. Stevenpiper et al. Examiner: Shih Chao Chen  
Serial No.: 10/628,019 Group Art Unit: 2821  
Filed: July 25, 2003 Docket: PD-02-0839  
Title: CIRCULARLY POLARIZED ANTENNA HAVING IMPROVED AXIAL RATIO

CERTIFICATE OF MAILING OR TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being filed via facsimile transmission to the U.S. Patent and Trademark Office on August 19, 2005.

By: 

Name: Anthony J. Orler

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

We are transmitting herewith the attached:

- ☒ Transmittal sheet, in duplicate, containing a Certificate of Mailing or Transmission under 37 CFR 1.8.
- ☒ Response to Notice of Drawing Inconsistency with Specification, marked up specification sheet showing changes and replacement specification sheet.

Please consider this a **PETITION FOR EXTENSION OF TIME** for a sufficient number of months to enter these papers, if appropriate.

Please charge all fees to Deposit Account No. 50-0494 of Gates & Cooper LLP. A duplicate of this paper is enclosed.

Customer Number 22462GATES & COOPER LLP

Howard Hughes Center  
6701 Center Drive West, Suite 1050  
Los Angeles, CA 90045  
(310) 641-8797

By: 

Name: Anthony J. Orler

Reg. No.: 41,232

AJO/bjs

Due Date: September 16, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Daniel F. Sievenpiper et al. Examiner: Shih Chao Chen  
Serial No.: 10/628,019 Group Art Unit: 2821  
Filed: July 25, 2003 Docket: PD-02-0839  
Title: CIRCULARLY POLARIZED ANTENNA HAVING IMPROVED AXIAL RATIO

CERTIFICATE OF MAILING OR TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being filed via facsimile transmission to the U.S. Patent and Trademark Office on August 19, 2005.

By:   
Name: Anthony J. Orler

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

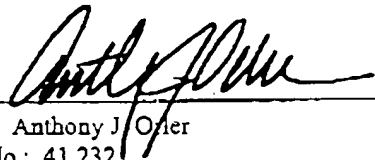
We are transmitting herewith the attached:

- ☒ Transmittal sheet, in duplicate, containing a Certificate of Mailing or Transmission under 37 CFR 1.8.
- ☒ Response to Notice of Drawing Inconsistency with Specification, marked up specification sheet showing changes and replacement specification sheet.

Please consider this a **PETITION FOR EXTENSION OF TIME** for a sufficient number of months to enter these papers, if appropriate.

Please charge all fees to Deposit Account No. 50-0494 of Gates & Cooper LLP. A duplicate of this paper is enclosed.

Customer Number 22462  
GATES & COOPER LLP  
Howard Hughes Center  
6701 Center Drive West, Suite 1050  
Los Angeles, CA 90045  
(310) 641-8797

By:   
Name: Anthony J. Orler  
Reg. No.: 41,232  
AJO/bjs

Due Date: September 16, 2005

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Daniel F. Sievenpiper et al. Examiner: Shih Chao Chen  
Serial No.: 10/628,019 Group Art Unit: 2821  
Filed: July 25, 2003 Docket: PD-02-0839  
Title: CIRCULARLY POLARIZED ANTENNA HAVING IMPROVED AXIAL RATIO

## CERTIFICATE OF MAILING OR TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being filed via facsimile transmission to the U.S. Patent and Trademark Office on August 19, 2005.

By:   
Name: Anthony J. Oler

RESPONSE TO NOTICE OF DRAWING INCONSISTENCY  
WITH SPECIFICATION

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir or Madam:

In response to the Notice of Drawing Inconsistency with Specification dated August 16, 2005, please amend the above-identified application as follows.

IN THE SPECIFICATION

Please amend page 2, lines 11-12 as follows:

-- FIGs. 3A ~~and 3B~~ through 3C depict the transmission of a surface wave across the high impedance surface;--

REMARKSI. Introduction

In response to the Notice of Drawing Inconsistency with Specification dated August 16, 2005, Applicants have amended the specification. A marked-up copy of the specification page showing the changes, and a replacement copy of the specification page, are attached hereto and marked accordingly in the header and footer of each page.

Specifically, the Notice points out that FIG. 3C was contained in the Drawings but not listed in the Brief Description of the Drawings in the specification. The corrections made herein address this inconsistency.


In view of the above, it is submitted that this application is now in good order for issuance and such issuance is respectfully solicited. Should the Publications Branch believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

GATES & COOPER LLP  
Attorneys for Applicant(s)

Howard Hughes Center  
6701 Center Drive West, Suite 1050  
Los Angeles, California 90045  
(310) 641-8797

Date: August 19, 2005

By:   
Name: Anthony J. Orler  
Reg. No.: 41,232

AJO/bjs

G&C 147.141-US-01

## MARKED UP SHEET SHOWING CHANGES

### BRIEF DESCRIPTION OF THE DRAWINGS

Referring now to the drawings in which like reference numbers represent corresponding parts throughout:

FIG. 1A is a diagram depicting communications among a spacecraft, an aircraft, and a terrestrial asset;

FIG. 1B is a diagram showing a circularly polarized antenna system;

FIG. 1C is a diagram of the circularly polarized antenna system, showing the scan angle;

FIG. 2 is a diagram presenting an illustration of one embodiment of the high impedance surface;

FIGs. 3A and ~~3B~~ through 3C depict the transmission of a surface wave across the high impedance surface;

FIGs. 4A and 4B depict the reflection phase of the high impedance surface;

FIG. 5A is a diagram showing a simple aperture antenna and a metal ground plane;

FIG. 5B is a diagram showing the return loss of the structure shown in FIG. 5A;

FIG. 6A is a diagram showing a simple aperture antenna and a high intensity surface;

FIG. 6B is a diagram showing the return loss of the structure shown in FIG. 6A;

FIG. 7A is a diagram illustrating E-plane and H-plane antenna patterns for the antenna shown in FIG. 5A;

FIG. 7B is a diagram illustrating E-plane and H-plane antenna patterns for the antenna shown in FIG. 6A;

FIGs. 8A and 8B are radiation patterns for the antennas shown in FIGs. 5A and 6A; and

FIGs. 9A and 9B are plots showing the improvement in pattern symmetry that is made possible by the high-impedance surface.

### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In the following description, reference is made to the accompanying drawings which form a part hereof, and which is shown, by way of illustration, several embodiments of the present invention. It is understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention.

## MARKED UP SHEET SHOWING CHANGES

## REPLACEMENT SHEET

### BRIEF DESCRIPTION OF THE DRAWINGS

Referring now to the drawings in which like reference numbers represent corresponding parts throughout:

FIG. 1A is a diagram depicting communications among a spacecraft, an aircraft, and a terrestrial asset;

FIG. 1B is a diagram showing a circularly polarized antenna system;

FIG. 1C is a diagram of the circularly polarized antenna system, showing the scan angle;

FIG. 2 is a diagram presenting an illustration of one embodiment of the high impedance surface;

FIGs. 3A through 3C depict the transmission of a surface wave across the high impedance surface;

FIGs. 4A and 4B depict the reflection phase of the high impedance surface;

FIG. 5A is a diagram showing a simple aperture antenna and a metal ground plane;

FIG. 5B is a diagram showing the return loss of the structure shown in FIG. 5A;

FIG. 6A is a diagram showing a simple aperture antenna and a high intensity surface;

FIG. 6B is a diagram showing the return loss of the structure shown in FIG. 6A;

FIG. 7A is a diagram illustrating E-plane and H-plane antenna patterns for the antenna shown in FIG. 5A;

FIG. 7B is a diagram illustrating E-plane and H-plane antenna patterns for the antenna shown in FIG. 6A;

FIGs. 8A and 8B are radiation patterns for the antennas shown in FIGs. 5A and 6A; and

FIGs. 9A and 9B are plots showing the improvement in pattern symmetry that is made possible by the high-impedance surface.

### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In the following description, reference is made to the accompanying drawings which form a part hereof, and which is shown, by way of illustration, several embodiments of the present invention. It is understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention.

## REPLACEMENT SHEET